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10/771,640

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James Ferguson White

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EXAMINER

OH, TAYLOR V

ART UNIT

PAPER NUMBER

1625

NOTIFICATION DATE

DELIVERY MODE

04/17/2008

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/771,640 | Applicant(s) WHITE, JAMES FERGUSON | |
| | Examiner Taylor Victor Oh | Art Unit 1625 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-25 and 29-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-25 and 29-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 2/4/04 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Final Rejection

The Status of Claims

Claims 17-25, and 29-39 are pending.

Claims 17-25, and 29-39 are rejected.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

The rejection of Claims 17-25, 29, 31,33-34, and 36-39 under 35 U.S.C. 112, first paragraph, has been withdrawn due to the modification of the claims in the amendment.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

The rejection of Claims 17-39 under 35 U.S.C. 112, second paragraph, has been withdrawn due to the modification of the claims in the amendment.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

The rejection of Claims 17-25, and 29-39 under 35 U.S.C. 102(a) as being anticipated clearly by Romanenko et al (WO 01/087798) ,which is equivalent to Romanenko et al (EP 1205241) has been withdrawn due to the modification of the claims made in the amendment.

However, due to the modification of the claims made in the amendment, it is necessary to apply a new rejection of obviousness under 35 USC 103 (a) .

Claim Rejections - 35 USC § 103

Applicants' argument filed 1/15/08 have been fully considered but are not persuasive.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 17-25, and 29-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Romanenko et al (WO 01/087798), which is equivalent to Romanenko et al (EP 1205241).

Romanenko et al (EP 1205241) discloses the following abstract:

(57) Abstract: The invention relates to catalytic compositions from metals of group VIII, used for purification of terephthalic acid, to methods of preparing such compositions and to a process of purification of terephthalic acid. The invention allows for creating stable and selective catalysts used in the process of purification of terephthalic acid. The catalytic composition comprises crystalline particles of palladium or catalytically active palladium and of at least one metal of group VIII of the periodic table, whereby said elements are deposited on the surface of a carbonated matter. The carbonated matter represents a mesoporous graphite-like material, whereby the size of pores thereof is comprised between 40 and 400 Å, the proportion of pores in the total volume is at least 0.5 and the degree of similarity thereof to graphite is at least 20 %. The crystalline particles of the metals are distributed across the volume of the granules of said carbonated matter such that the maxima of distribution of the active components of the granule are separated from the external surface of the granule by a distance equal to 1-30 % of the radius of the granules. The inventive catalytic composition comprises crystalline particles of palladium and rhodium or of palladium and ruthenium or else of palladium and platinum, whereby the total metal content may vary between 0.1 and 3.0 wt.%, and the ratio of palladium to other metals may vary between 0.1 and 10.0.

Example 3.

[0030] The catalyst is prepared by combined application of Ru and Pd, using aqueous solutions of RuOHCl_3 and H_2PdCl_4 as metal precursors, respectively. For this purpose, a cylindrical rotated reactor is charged with 50 g of Sibunit 1 carbon carrier. 13 ml of an aqueous solution of Na_2CO_3 (0.371 mole/l) and 13 ml of H_2PdCl_4 (0.109 mole/l) + RuOHCl_3 (0.076 mole/l) are fed to a nozzle with the same space velocity (2.5 ml/min) in the molar ratio $\text{Na}_2\text{CO}_3 : (\text{Ru}+\text{Pd}) = 2:1$, and the resulting mixture is sprayed into the reactor. The catalyst is discharged and dried under vacuum at 70°C to constant weight. The subsequent operations of reducing, washing and drying are similar to Example 1. The resulting product is a (Ru-Pd)/Sib. 1 catalyst containing 0.2 percent by weight of ruthenium and 0.3 percent by weight of palladium.

(see page 5, example 3).

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Example 38.

[0069] The method of purifying terephthalic acid is similar to that described in Example 36, the difference being in that the purification is carried out on the catalysts prepared as described in Examples 3 and 34 with an increased initial content of p-carboxybenzaldehyde, equal to 30,000 ppm.

[0070] The analytic data on the quality of terephthalic acid purified by this method are presented in Table 5.

(see page 9, example 38).

Example 39.

[0071] 500 ml of distilled H₂O, 25 g of impure terephthalic acid containing 3552 ppm of 128 ppm of p-toluic acid are charged into a 750 ml stainless steel cylinder (solvent). After that the autoclave cover is put onto the cylinder and screwed down tightly. 2.0 g of the catalyst prepared as described in Example 1 are placed on a grid of a reactor comprising a stainless steel tube with an inner diameter of 10 mm, having a drain opening at the height of 110 mm from a lower grid, and fixed from the top with the second grid. The reactor is coupled to the solvent. The drain opening of the reactor via a thermostated steel capillary is tightly coupled to a crystallizer which comprises stainless steel autoclave having a capacity of 750 ml. The solvent, reactor and crystallizer are disposed in a heated temperature-controlled cabinet. The system is purged with nitrogen, then with hydrogen, H₂ being bubbled through the aqueous suspension of terephthalic acid in the solvent, and the pressure is brought up to 10 atm with hydrogen. On the control panel the temperature is set to be 250°C, and heating of the temperature-controlled cabinet is switched on. As soon

as the temperature in the system reaches the prescribed value, hydrogen is supplied to the solvent with a constant space velocity by means of a gas flow regulator. Constant pressure in the system is maintained by keeping a pressure regulator disposed at the crystallizer outlet in "pulled back" position. As the gas gradually enters the system, it displaces the terephthalic acid solution from the solvent into the reactor, and the terephthalic acid solution is forced with a constant velocity through the catalyst bed from bottom upwards and drained through the drain opening into the crystallizer. Forcing the solution through the reactor takes 8 hours. The reaction mass is cooled down, and the setup is purged with nitrogen. The contents of the crystallizer (terephthalic acid suspension in water) are transferred to a glass filter, filtered, washed with distilled water (100 ml), and dried under vacuum at 75°C for 2 hours. From the powder of terephthalic acid thus obtained samples are taken for impurity analysis.

(see pages 9-10 ,example 39).

Table 1. Main characteristics of some granulated porous carbon materials

| Ros. | Grade | Origin (source) | Appearance | Size, mm | $A_{ext}^{(1)}$, m ² /g | $V_{meso}^{(2)}$, cm ³ /g | $V_{meso}^{(3)}$, cm ³ /g | $V_z^{(1)}$, cm ³ /g | V_{meso}/V_z | $D_{mean}^{(3)}$, Å | $R^{(3)}$, % |
|------|-----------|-----------------|------------|----------|-------------------------------------|---------------------------------------|---------------------------------------|----------------------------------|----------------|----------------------|---------------|
| 1 | AR-8 | Coal | Rod-like | 4-5 | 438 | 0.192 | 0.027 | 0.219 | 0.12 | 20 | 5 |
| 2 | CG-5 | Coconut carbon | Crushed | 3-6 | 1024 | 0.438 | 0.047 | 0.485 | 0.10 | 19 | 10 |
| 3 | L-2702 | Coal | Rod-like | 4-8 | 1024 | 0.453 | 0.046 | 0.499 | 0.03 | 19 | |
| 4 | FB-4 | Coal | Rod-like | 4-6 | 606 | 0.222 | 0.144 | 0.365 | 0.39 | 24 | |
| 5 | KVO-1 | Hydrocarbons | Granule | 3-5 | 120 | 0.010 | 0.310 | 0.32 | 0.97 | 107 | 40 |
| 6 | Sibunit 1 | Hydrocarbons | Granule | 2-3 | 440 | 0.015 | 0.665 | 0.690 | 0.98 | 62 | 60 |

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- ³⁵ A_{acc} (m^2/g) is the specific surface area according to BET. The surface area was calculated within the isotherm region where $P/P_0 = 0.05-0.30$; the value of the nitrogen molecule area in the filled monomolecular layer was assumed to be equal to $\omega = 0.162 \text{ nm}^2$;
- ³⁶ V_{micro} (cm^3/g) is the volume of micropores. It was calculated, using comparative method within isotherm regions corresponding to the region between the filling of micropores and the onset of capillary condensation; the value V_{micro} corresponds to the total volume of ultramicro- and supermicropores, that is, to the volume of micropores whose size is smaller than 20 \AA ;
- ³⁷ V_{meso} (cm^3/g) = $V_t - V_{\text{micro}}$;
- ³⁸ V_t (cm^3/g) is the volume of pores whose size is smaller than 5000 \AA . It is calculated from the adsorption of nitrogen at $P/P_0 = 0.98$;
- ³⁹ D_{meso} (\AA) is the mean size of pores, calculated as $D_{\text{meso}} = 4 \cdot 10^4 \cdot V_t / A_{\text{acc}}$;
- ⁴⁰ X (%) is the degree of crystallinity, calculated from the integral peak intensity (002); diffractograms were recorded on a HZG-4C diffractometer ($\text{CuK}\alpha$, graphite monochromator).

(see page 11 ,table 1).

However, the instant invention differs from the prior art in that a second set pores having a pore diameter of at minimum about 5,000 angstroms and at most about 20,000 angstroms; 34% of total Hg porosity occurs in pores having a diameter of about 5,000 angstroms.

With respect to 34% of total Hg porosity happened in pores having a diameter of about 5,000 angstrom, the limitation of a process with respect to time, temperature, percentage does not impart patentability to a process when such values are those which would be determined by one of ordinary skill in the art in achieving optimum operation of the process. The % of the of total Hg porosity in the granulation process of making porous carbon materials is well understood by those of ordinary skill in the art to be a result-effective variable, especially when attempting to control selectivity of the catalytic process.

Concerning the pore diameter of at minimum about 5,000 angstrom, the prior art expressly discloses that V_{Σ} is the vol. of pores whose size is smaller than 5,000 angstrom (see page 11, table 1). The term “about” in the claimed phrase of “about 5,000 angstrom” may imply that it can be interpreted as the pore diameter having more or less than 5,000 angstrom. Therefore, it seems reasonable to assume that the vol. of pores in the prior art can be within the range of the claimed one. Thus, it is obvious to the skilled artisan in the art to be motivated to arrive at the claimed limitation by a routine experimentation.

Romanenko et al expressly discloses the purification of the terephthalic acid to be carried out on the catalyst containing palladium and ruthenium prepared from the basis of various characteristics of granulated porous carbon materials as shown in table 1; furthermore, the % of the of total Hg porosity in the granulation process of making porous carbon materials is well understood by those of ordinary skill in the art to be a result-effective variable; therefore, it is obvious to the skilled artisan in the art to be motivated to control selectivity of the catalytic process by adjusting the % of the of total Hg porosity in the granulation process of making porous carbon materials in the prior art process by a routine experimentation. This is because the skilled artisan in the art would expect such a manipulation to be feasible and successful in the prior art process.

Applicants' Argument

Applicants argue the following issue:

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a. The prior art discloses that the porosity for the largest diameter of pores is less than 5,000 angstroms, therefore, it is not anticipated over the claimed invention.

Applicants' arguments have been noted, but the arguments are not persuasive.

First, regarding the applicants' argument, the Examiner has noted applicants' arguments. However, as indicated in the above, the meaning of the term "about" in the claimed phrase of "about 5,000 angstrom" may imply that it can be interpreted as the pore diameter having more or less than 5,000 angstrom. Therefore, it seems reasonable to assume that the vol. of pores in the prior art can be within the range of the claimed one. Thus, it is obvious to the skilled artisan in the art to be motivated to arrive at the claimed limitation by a routine experimentation.

Therefore, applicants' argument is not persuasive.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Taylor Victor Oh whose telephone number is 571-272-0689. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Taylor Victor Oh/
Primary Examiner, Art Unit 1625

4/12/08
